Henry Skinner

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## STATED MEETINGS

Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursdays of each month, excepting June, July, August, November and December, and on the third Thursdays of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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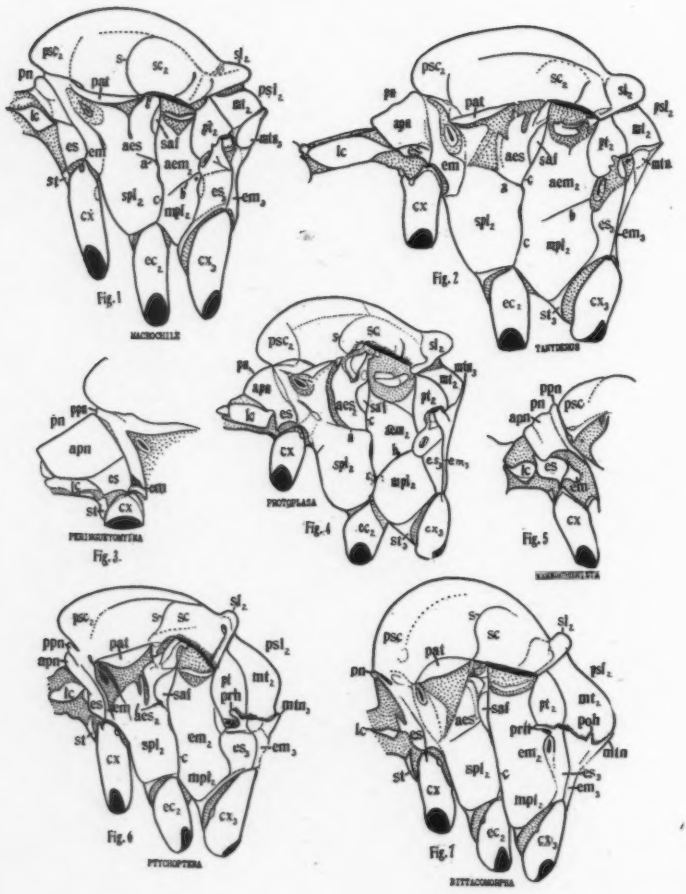


THORACIC SCLERITES OF PSYCHODOID DIPTERA—CRAMPTON.

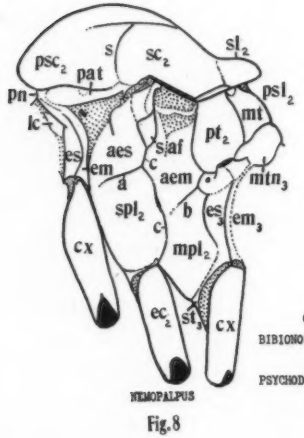


Fig. 8

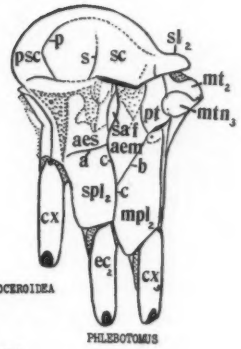


Fig. 9

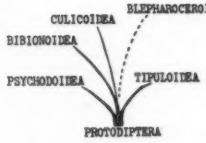


Fig. 12

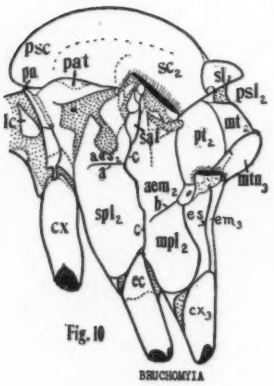


Fig. 10

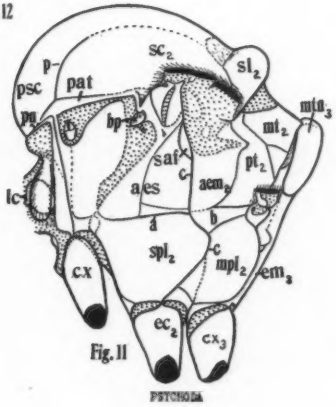


Fig. 11

THORACIC SCLERITES OF PSYCHODOID DIPTERA.—CRAMPTON.

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## A Phylogenetic Study of the Thoracic Sclerites of the Psychodoid Diptera, with Remarks on the Interrelationships of the Nematocera.

By G. C. CRAMPTON, Mass. Agricultural College, Amherst, Mass.

(Plates III and IV.)

Through the kindness of Dr. J. W. Campbell and Mr. T. R. Harris, I have been able to make a study of the anatomy of such rare and primitive New Zealand Diptera as *Nemopalpus. Tanyderus,* etc., and Dr. C. P. Alexander has very generously permitted me to make a detailed study of the amber Dipteran *Macrochile,* which is in some respects the most primitive Dipteran of which we have any knowledge and presents many features common to several groups of Diptera. Mr. R. Shannon and Mr. H. S. Barber have very kindly given me a number of specimens of *Phlebotomus,* and through the kindness of Mr. F. W. Edwards, I have been able to study several other types of Psychodidae. For the specimens of *Nannochorista* studied, I am indebted to Dr. Campbell and Mr. Harris. Since most of the insects here figured are extremely rare and valuable, I am more than grateful to the above-mentioned gentlemen for permitting me to make this study.

The principal point brought out in this study, is the close relationship between the Ptychopteridae, Tanyderidae and Psychodidae, indicated by the thoracic sclerites. Mr. Edwards has very kindly consented to allow me to quote his statement, made *in litteris,* that the Tanyderidae and Psychodidae should be grouped in a single superfamily, the Psychodoidea. Just after learning of Dr. Edwards' view, I had an opportunity of making a detailed anatomical study of *Macrochile* contained in a collection of amber Diptera received by Dr. Alexander; and the study of *Macrochile,* which offers the key to the whole



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situation, clearly indicates that the Ptychopteridae, Tanyderidae and Psychodidae should be grouped in a single superfamily or similar division of the Nematocerous Diptera, since *Macrochile* is in a sense a synthetic type combining characters occurring in the Ptychopteridae, Tanyderidae and Psychodidae. In fact, I consider that *Macrochile* is the nearest living representative of the common ancestor of these families, although *Macrochile* is itself an "out and out" Tanyderid, as Dr. Alexander points out from its venational characters—and as is indicated by its head and thoracic structures as well.

Before taking up the discussion of those features in which *Macrochile* is annectant between the rest of the Tanyderidae and the Ptychopteridae and Psychodidae, I would call attention to some of the thoracic characters which all of these insects have in common, and which indicate that they should be grouped in a single superfamily, the Psychodoidea.

In all of the Psychodoidea, the meral region of the middle coxa becomes detached from the coxa and fuses with the lower portion of the mesothoracic epimeron to form the area labelled *mpl* in all figures. The only other lower Diptera in which this occurs are the Eriopterine Tipuloids, and this fact may have some phylogenetic significance. There is a fusion of the meral region with the lower portion of the epimeron in the mesothorax of the Blepharoceridae, also, but the meron does not become detached from the coxa as in the Psychodoidea and Eriopterine Tipuloids, so that the end result in the Blepharoceridae is different, and hence has no particular phylogenetic significance.

A second feature common to all Psychodoids is the fact that the scutal suture labelled *s* in all figures is incomplete, while in the Tipuloids, and of course in the Eriopterine Tipuloids as well, the scutal suture forms the well-known "V-shaped" suture familiar to all systematists.

In practically all Psychodoids, the suture labelled *a* in all figures, is incomplete, and in all of these insects, the sclerite labelled *saf* is more or less clearly demarked.

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*Macrochile* exhibits all of the above-mentioned features common to all Psychodoids, and in addition, it offers certain characters indicating that it is anatomically intermediate between the different Psychodoid families, and hence has departed less than any of the other forms here studied, from the condition characteristic of the common ancestor of these Psychodoid families.

Thus, in the length of the coxae, *Macrochile* (Fig. 1) is intermediate between the Tanyderid types with short coxae shown in Figs. 2 and 4, on the one hand, and the Psychodid types with extremely long coxae shown in Figs. 8 and 10, on the other; and it is aproached by the Ptychopterid shown in Fig. 6. This fact taken alone, has no particular significance, since short and long types of coxae occur in some members of all three Psychodoid families, but taken in connection with the other features here mentioned, this fact does have some significance.

In the relative sizes of the prothorax, and the pronotum in particular, *Macrochile* (Fig. 1) is intermediate between the Tanyderid types shown in Figs. 2, 3 and 4, with their greatly elongated pronota and the Psychodid types shown in Figs. 8 and 10, with their greatly reduced pronota; and again, the condition exhibited by *Macrochile* is approached by that of the Ptychopterid shown in Fig. 6. In fact, the general character of the thorax of *Macrochile*, which is not as depressed as that of the rest of the Tanyderids, nor as elongated as that of the lower Psychodids, furnishes a more suitable "starting-point" from which these other types (and that of the Ptychopterid shown in Fig. 6, as well) could be derived, than does any other of the forms here shown; and I think that *Macrochile* represents more nearly than any other, the type ancestral to the Psychodoidea in general, although, of course, this does not mean that *Macrochile* is the actual ancestor of the Psychodoidea.

Since some Mecoptera (which are very like the ancestors of the Diptera) have a rather broad pronotum, as in the Mecopteran *Nannochorista*, shown in Fig. 5, this might be taken to indicate that the broader type of pronotum exhibited

by the Tanyderids shown in Figs. 2, 3 and 4, represents a more primitive condition than that of *Macrochile*. On the other hand, some Mecoptera also have quite narrow pronota (as in *Bittacus* and other members of the order) so that the narrow pronotum of *Macrochile* is not of necessity a specialization, and its pronotum is assuredly more like those of the rest of the Psychodoidea than is the case with pronota of the Tanyderids other than *Macrochile*.

Although the enlarged pronotum of such Tanyderids as the ones shown in Fig. 2, may not represent a specialization, the greatly elongated neck plate *lc* of this insect certainly seems to be a case of specialization in the direction of extreme length, when we compare this region in *Tanyderus* (Fig. 2) with the same region in a Mecopteran such as *Nannachorista* (Fig. 5), and it would seem that the elongated lateral cervical *lc* of the Tanyderids shown in Figs. 4 and 3 shows more specialization than does the more normal type of lateral cervical *lc* in the insect shown in Fig. 1. If the lateral cervical plates of these Tanyderids are more specialized than that of *Macrochile*, it is also possible that their pronota are likewise more specialized than that of *Macrochile;* and the huge pronotum of *Peringuey-omyina* (Fig. 3) seems to indicate that there is an orthogenetic tendency in the group to develop an unusually long pronotum, so that the large pronota of these Tanyderids may possibly denote a degree of specialization rather than a retention of a condition more primitive than that exhibited by *Macrochile*.

Whether or not *Macrochile's* pronotum is more primitive than the pronota of the other Tanyderids, it is none the less true that *Macrochile's* pronotum is more like that of the rest of the Psychodoidea; and the rest of the Psychodoidea exhibit a marked tendency toward the reduction of the pronotum which is carried to the extreme in such Psychodoids as the one shown in Fig. 7, or in those shown in Figs. 11, 10 etc. *Macrochile* would thus offer a better "starting point" than any other Tanyderid, in attempting to trace the modification of the pronota of the Psychodoidea in general.

In regard to the metanotum, this region is extremely large

in *Nemopalpus*, *Bruchomyia* and *Psychoda* (*i. e.*, the region labelled *mtn* in Figs. 8, 10 and 11), although in such a Psychodid as *Phlebotomus* (Fig. 9, *mtn*) it becomes markedly narrow in the median region. The metanotum *mtn* of *Macrochile* (Fig. 1) is somewhat intermediate in type between that of the Tanyderids and Psychodids, so that even in this particular also, *Macrochile* occupies an intermediate anatomical position in keeping with its general annectant character.

It is rather disappointing to find that *Phlebotomus*' metanotum is narrowed in the median region, since the combination of peculiarly broad metanotum and extremely narrowed pronotum would otherwise serve to differentiate the Psychodidae from the other Psychodoid families. The very narrow pronotum and medianly narrowed metanotum of *Bittacomorpha* (Fig. 7) however, would indicate that *Bittacomorpha* might have inherited some of the tendencies which affect the mode of development of *Phlebotomus* (Fig. 9) also, and the Psychodidae and Ptychopteridae thus exhibit in some of their members peculiar tendencies which may have been inherited from a common ancestry. The type of pronota, however, is not precisely similar in the Psychodidae and in the Ptychopteridae with reduced pronotum (Fig. 7), so that there is no difficulty in distinguishing the two groups thoracically, and the suture *b*, present in the Psychodids, is lacking in the Ptychopterids.

All of the Ptychopteridae which I have examined have a peculiar "prehaltere" labelled *prh* in Figs. 6 and 7. This "prehaltere" may possibly serve as an organ for detecting currents of air in flight, or for directing flight, or some similar function, although its real significance is not known. It seems to be peculiar to the Ptychopteridae, since I have seen no mention of its occurrence in other groups of Diptera, although in the Syrphidae an organ having a somewhat similar appearance occurs under the fore wing in the region of the subalar plate, but of course it is not in any sense homologous with the organ in question in the Ptychopteridae.

The location of the metathoracic spiracle extremely close to

the base of the cut-off halter in the Ptychopterids here figured is a character they share with all Psychodoids, while the very tiny mesothoracic spiracle (located just back of the pronotum) is peculiar to all the Psychodidae and the tendency toward the reduction of the mesothoracic spiracle is not shared by the rest of the Psychodoidea. It may be remarked in passing, that the mesothoracic spiracle of the Mecopteran *Nannochorista* (Fig. 5) is very tiny also, but the mesothoracic spiracle is proportionately much larger in the Mecopteran *Bittacus*.

The thoracic features indicating a close relationship between the Ptychopteridae, Tanyderidae and Psychodidae, then, are the location of the metathoracic spiracle very close to the halter, the fusion of the detached mesothoracic meron with the lower portion of the epimeron, the demarcation of the sclerite *saf*, and the incomplete character of the suture *a*, and of the suture *s* (of all figures). The nature of the thoracic structure would thus indicate that the Ptychopteridae, Tanyderidae and Psychodidae were descended from a common ancestry (from which *Macrochile* has departed but little) and should be grouped in a single superfamily, the Psychodoidea.

I formerly thought that the subfamily Bruchomyinae, placed in the Tanyderidae by Dr. Alexander, represents a distinct family, the "Bruchomyidae," but the thoracic sclerites of *Bruchomyia* and *Nemopalpus* (Figs. 10 and 8) are so similar to those of such Psychodidae as *Phlebotomus* (Fig. 9) that it is necessary to place the Bruchomyines in the family Psychodidae. The male genitalia, venation, etc., of *Bruchomyia*, however, are of a quite different type from those of *Phlebotomus* and *Psychoda*, and I would prefer to retain the subfamily Bruchomyinae instead of sinking it in the Phlebotominae as Mr. Edwards seems inclined to do.

(To be continued.)

ABBREVIATIONS.

*a*.....Anepisternal suture
*aem*.....Pteropleurite or anepimerum
*aes*.....Anepisternum

*apn*.....Antepronotum
*b*.....Anepimeral suture
*bp*.....Basalar pit
*c*.....Pleural suture
*cx*.....Coxa
*ec*.....Eucoxa
*em*.....Epimerum
*es*.....Episternum
*lc*.....Lateral cervical plate (laterocervicale)
*mpl*.....Meropleurum
*mt*.....Mediotergum
*mtn*..... Metanotum
*p*..... Prescutal suture
*pat*.....Paratergum
*pn*.....Pronotum
*poh*..... Posthaltere
*ppn*.....Postpronotum
*prh*..... Prehaltere
*psc*..... Prescutum
*psl*.....Postscutellum
*pt*.....Postalare or pleurotergum
*s*.....Scutal suture
*saf*.....Subalifer
*sc*.....Scutum
*sl*..... Scutellum
*spl*.....Sternopleurum or katepisternum
*st*.....Sternum

EXPLANATION OF PLATES III AND IV.

Fig. 1....Thorax of Tanyderid *Macrochile spectrum*
Fig. 2....Thorax of Tanyderid *Tanyderus forcipatus* and another species combined
Fig. 3....Prothorax of Tanyderid *Peringueyomyina barnardi*
Fig. 4....Thorax of Tanyderid *Protoplasa fitchii*
Fig. 5....Prothorax of Mecopteran *Nannochorista dipteroides*
Fig. 6....Thorax of Ptychopterid *Ptychoptera rufocincta*
Fig. 7....Thorax of *Bittacomorpha clavipes* (a Ptychopterid)
Fig. 8....Thorax of Psychodid *Nemopalpus zeylandiae*
Fig. 9....Thorax of Psychodid *Phlebotomus* sp.
Fig. 10...Thorax of Psychodid *Bruchomyia argentina*
Fig. 11...Thorax of Psychodid *Psychoda* sp.

All figures are lateral views, and the anterior end is directed toward the left hand margin; the dorsal region is toward the top of the plate.

## A New Californian Syrphid (Diptera).

By W. M. DAVIDSON, U. S. Bureau of Entomology,
Vienna, Virginia.*

**Ceriodes durani** sp. nov.

Medium-sized species; pedicel of antennae very short; third antennal joint longer than second; abdomen slightly longer than head and thorax combined, basally constricted; black and yellow species with rufous legs.

♀. Length (antennae excluded) 12mm. Length of wing 9mm. Antennal process or pedicel short, below practically obsolete, one-fifth as long as first antennal joint, testaceous, black at base where it joins the frons. First antennal joint a little shorter than third, third nearly three times as long as

Antennae of *Ceriodes durani.*

second, style two-thirds as long as second joint; first joint rufo-testaceous, second fuscous, shining, third dull velvety black, style bright yellow, terminal; first two joints short black pilose. Front yellow, a broad transverse black band across the ocelli reaching the eyes, pile fulvous. Rugose areas of the chitin are present adjacent to the upper eye corners. Post-ocular orbits black, yellow pollinose and pilose and enclosing an irregularly-shaped orange spot at lower third of the eyes. Below the eyes is an elongate orange spot widening at its junction with the mouth edge and enclosed by the black of the cheeks and the black oblique facial stripe which connects the lower eye margin with the mouth edge. Sparse fulvous pile on cheeks and lower face. Face yellow, about the base of the antennal pedicel black, a small black dash on either side of the median below the antennae, a brown median spot just above the oral margin, an oblique black stripe connecting the lower eye corner with the mouth edge. Profile almost straight, a hardly perceptible tubercle just above the center of the mouth. Thorax dull black, with two narrow yellow parallel dorso-

* Published with permission of the Secretary of Agriculture.

lateral stripes behind the suture and not attaining any margin or suture. Posterior angles brown. Humeral and ante-alar callosities yellow; a large oval yellow spot on the mesopleura, a smaller one on the sternopleura below, no yellow spot on the pteropleura. Halteres orange. Squamae white; pile fulvous, short. Wings without bristles except on the costa; anterior half clouded light brown; discal portion of third vein obtusely angulate and petiolate midway between its apex and the anterior cross-vein. Legs reddish-yellow; femora on distal half below armed with two rows of short black spines. Pile of legs fulvous. Coxae brown, light pilose. Scutellum yellow, anterior margin narrowly black, pile yellow. The thoracic pile is white and recurvent on the dorsum and fulvous on the yellow side areas. Post-scutellum black.

Abdomen constricted at the suture between first and second segments, widest at middle of third segment. First segment black, sides narrowly brown, pile mostly whitish and erect at sides. Second segment about two-thirds as long as third or fourth, black, sides narrowly brown, the posterior border broadly yellow, annulate and shining; pile mostly fulvous and recurvent. Third and fourth segments black, each with a broad posterior yellow shining fascia and fulvous recurvent pile. On the dull disc of the third segment are two small triangular areas of yellow pollen, separated narrowly in the middle, their bases almost attaining the yellow posterior fascia. Similar but more extensive pollinose areas occur on the fourth segment, and these almost reach the anterior and lateral margins of the segment. Fifth segment and venter of fourth black, entirely clothed with yellow pollen. Pile of the posterior segments fulvous and recurvent. The yellow fasciae reach the lateral margins for their full width.

♂. Length (antennae excluded) 11.5mm.

Vertical triangle black, shining. The enclosed yellow stripe below the eyes reduced to two small spots, and the orange spot behind the eyes much less extensive than in the female. The brown spot on the face below darker and more extensive than in the female, and produced upwards almost to the antennal pedicel in two narrow brown lines. Eighth tergite black, yellowish pollinose, with two small testaceous spots in front, the pile yellow and black. Sixth and seventh tergites light brown, chiefly black pilose.

*Type* female collected on April 18, 1915, in Mitchell Canyon at the base of Mt. Diablo, Contra Costa County, California.

*Allotype* male collected on April 23, 1916, in the same locality. Both were taken about blossoms of poison oak *(Rhus diversiloba)*, a plant much favored by syrphids. Types in the U. S. National Museum (Cat. No. 28121).

Named for Mr. Victor Duran, who has collected extensively in California.

## Enodia portlandia, andromacha and creola (Lep., Rhopalocera).

By Henry Skinner.

Mr. George P. Engelhardt, Curator of the Department of Natural Science of the Brooklyn Museum, has recently sent me six specimens of an *Enodia,* one from Mobile, Alabama, and five from Gainesville, Florida, all taken in the month of May.

There were five specimens here at the Academy of Natural Sciences of Philadelphia: four from Chicasaw, Alabama, taken near the end of August, by W. C. Dukes, and one from Macon, Georgia, caught by Fred. W. Walker, April 11th, 1915. The specimens from Florida and the other places are a form or race that have been sent to me as *creola* Skinner. However, it is not the same form or species. I only know of *creola* from the type and allotype in the collection here at the Academy and the perfect figure of the insect in Dr. Holland's *Butterfly Book.*

The southern form from Florida, Alabama and Georgia is very well figured under the name *andromacha* in Hübner's Samm. Exotischer Schmetterlinge, Band I. It is also beautifully figured by Boisduval and Leconte, Hist. Gen. Lep. Amer. Sept. pl. 58, under the name *portlandia.* Typical *portlandia* is well figured by W. H. Edwards in his great work on the Butterflies of North America, volume three We have some nice specimens of *portlandia* from as far north as Miniota, Manitoba, Canada, taken by Hugh Gibbon, in the latter part of June. *Andromacha* represents the Gulf State form of *portlandia,* or a different species, according to whether you are a lumper or a splitter.

The exact status of *creola* is not known; the spaces between the veins on the primary wings are filled by plush-like scales,

olive-green in color and on each of these spaces is a fawn-colored spot, wedge-shaped, and at the outer end of each of these is an ocellus; the first, third and fourth are of the same size and the second and fifth are almost obsolete. The ocelli in *andromacha* vary in size and are twice as large as in *creola*. There is no white on *creola* below, which is so conspicuous in *andromacha*. If one compares Dr. Holland's figure of *creola* with the figure of *andromacha* (as *portlandia*) in Boisduval and Leconte, the differences will be readily seen. What their relationship is, time, study and plenty of material will determine.

## A Short List of Scutelleroidea Collected in New Mexico in 1916.

By GEO W. BARBER,
Cereal and Forage Insect Investigations, Bureau of Entomology, United States Department of Agriculture.

During the summer of 1916 at a field station located at Maxwell, New Mexico, the writer was engaged in a study of a Pentatomid *(Chlorochroa sayi* Stal) injurious to the immature heads of grain. Several species of Scutelleroidea were collected from May to September of that year and the following list of these captures is offered here in the interest of geographical distribution.

Maxwell, Colfax County, New Mexico, lies in the northeastern corner of the state on the Santa Fe railroad, about 20 miles from the Colorado line. The immediate country is a rolling plateau, the elevation of Maxwell being 6,078 feet according to Gannett's *Dictionary of Altitudes in the United States* (1890, U. S. Geol. Surv., Bull. 160). This plateau is bounded by mountains on the north, east and west, but is open towards the south. On the west Culebra range lies some 30 miles distant while the Raton range lies about 10 miles to the east and borders the plateau on the north. At Maxwell, a small irrigation project supported a population of a few hundred people in 1916, the principal crops being alfalfa, sugar beets, beans and so forth.

Several years ago Mr. Otto Heidemann determined several of the species listed, while Prof. E. P. Van Duzee has more recently named several others. A list of the species collected during 1916 follows:

| | |
|---|---|
| *Homaemus parvulus* (Germ.) | VIII 18; IX 18, 30. |
| *Amnestus pusillus* Uhl. | IX 2. |
| *Rhytidolomia viridicata* (Walk.) | V 28. |
| *Rhytidolomia faceta* (Say) | V 19. |
| *Chlorochroa ligata* (Say) | V 22 IX 16. |
| *Chlorochroa sayi* Stal | Throughout season. |
| *Carpocoris remotus* Horv. | VII 14. |
| *Aelia americana* Dall. | V 25. |
| *Thyanta custator* (Fabr.) | Throughout season. |
| *Thyanta rugulosa* (Say) | V 18. |
| *Murgantia histrionica* (Hahn) | V 19. |
| *Perillus bioculatus* (Fabr.) | V 28. |
| *Perillus virgatus* Dist. | V 22; VI 14. |
| *Apateticus marginiventris* (Stal) | VII 21. |
| *Podisus acutissimus* Stal | VIII 7. |

## Undescribed Species of Crane-Flies from the Eastern United States and Canada. (Dipt.: Tipulidae). Part II.

By CHARLES P. ALEXANDER, Massachusetts Agricultural College, Amherst, Massachusetts.

In the present paper a few of the more interesting novelties that have recently come to hand are described. These were included in extensive collections submitted by Professor Rogers and Mr. Curran, and smaller lots received from Dr. Crampton, Mr. Lacroix and Mr. Shannon. The very interesting *Hexatoma* was included in the extensive collections of the Vienna Museum, kindly sent to me for study by Dr. Zerny in 1921. The fly was described at that time, but the diagnosis withheld from press in the hope that more material would be forthcoming in some one or another of the extensive collections of North American Tipulidae now being studied. No further material has come to hand, however, and it seems best to describe the species without further delay. My sincere thanks are extended to all of the gentlemen mentioned for their kind co-operation in making known this still insufficiently-known fauna. Where

not mentioned to the contrary, the types are preserved in the writer's collection.

**Dicranomyia rogersiana** sp. n.

General coloration shiny brown and yellow; antennae brownish black throughout; head gray, the center of the vertex black; mesonotal praescutum with three broad darker stripes; wings with a faint brownish tinge, stigma oval, darker brown; *Sc* long, $Sc_1$ and $Sc_2$ subequal; cell 1*st* $M_2$ closed; male hypopygium with a single dististyle that is narrowed at apex into a slender finger-like lobe.

♂ Length about 4 mm.; wing 4.8 mm. ♀ Length about 5 mm.; wing 5.4 mm.

Rostrum and palpi brownish black. Antennae brownish black throughout, the flagellar segments short-oval, becoming more elongate outwardly, the verticils longer than the segments. Head dark gray, the center of the vortex black.

Pronotum dark brown above, paler laterally. Mesonotal praescutum shiny yellow with three broad shiny brown stripes, the median one broad, more widened posteriorly; lateral stripes widely separated from the median one, occupying the lateral margin of the praescutum and not confluent with the scutal vittae; remainder of mesonotum shiny light brown. Pleura dark brown. In the type male, the colors are much paler and the specimen is presumably teneral. Halteres short, yellow, the knobs brown.

Legs with the coxae and trochanters brownish testaceous: femora dark brown, the bases paler; tibiae and tarsi brownish black.

Wings with a very faint brownish tinge, the oval stigma darker brown; veins dark brown. Macrotrichiae of veins relatively long and conspicuous. Venation: *Sc* long, ending opposite two-thirds the length of *Rs* (♀) to four-fifths this distance (♂) $Sc_2$ at tip of $Sc_1$, *Rs* arcuated to slightly angulated at origin; *r* at tip of $R_1$, provided with macrotrichiae, the tip of $R_1$ pale and subobsolete; cell 1*st* $M_2$ large, short-rectangular, about one-half longer than vein $M_4$ beyond it; *m-cu* close to fork of *M*. In the female, *m* is longer and arcuated.

Abdomen dark brown, the ninth segment of male more yellowish; hypopygium dark. Male hypopygium with the basistyles elongate, with a simple lobe near base of the ventro-mesal aspect. A single dististyle, this broad on basal two-thirds, the apical third suddenly prolonged into a slender, finger-like lobe; outer face of style with a few long powerful setae, the

lower or cephalic face with more abundant microscopic setulae. Ovipositor with the tergal valves slender, acute at tips, gently upcurved.

*Habitat.*—Georgia, Florida. *Holotype*: ♂, Gainesville, Alachua County, Florida, May 30, 1924 (*J. S. Rogers*); Collector's No. 156. *Allotype:* ♀, 2 miles north of Vienna, Dooley County, Georgia, June 1, 1923, at light *(J. S. Rogers)*.

This interesting crane-fly is named in honor of my friend, Professor J. Speed Rogers. Of the described Nearctic species the fly may be confused only with *D. globithorax* Osten Sacken, from which it differs in the normal structure of the mesonotum, the venation, and structure of the male hypopygium. The type is preserved in the writer's collection, the allotype returned to Professor Rogers.

**Dicranomyia lacroixi** sp. n.

General coloration brownish ochreous, the praescutum with three conspicuous dark brown stripes; pleura uniformly ochreous; antennae black throughout; wings narrow, cell 1*st M*$_2$ closed; male hypopygium with a single dististyle, this produced into an elongate powerful rostrum bearing a single small spine near midlength.

♂ Length about 6 mm.; wing 6.9 mm.

Rostrum brownish yellow, the palpi black. Antennae black throughout, the flagellar segments oval with short verticils. Head dark gray, the anterior vertex more infuscated, the occiput paling into brownish ochreous; anterior vertex about one-half wider than the diameter of the basal scapal segment.

Pronotum brownish ochreous with a broad, dark brown, dorsal stripe. Mesonotum brownish ochreous the praescutum with three conspicuous dark brown stripes, the short lateral stripes crossing the suture and including the scutal lobes; remainder of mesonotum dark-colored, pruinose. Pleura uniformly brownish ochreous, this color likewise including the postnotal pleurotergite. Halteres relatively short, dark brown, the extreme base of stem yellowish.

Legs with the coxae and trochanters obscure yellow; remainder of legs elongate, dark brown, the femoral bases paler.

Wings long and narrow, tinged with yellowish; a vague dusky seam along vein $Cu_1$ and the anal angle strongly infuscated; veins of the costal region yellowish, the distal and posterior veins darker. Venation: $Sc_1$ ending about opposite

one-fifth the length of *Rs*, $Sc_2$ not evident; *Rs* gently arcuated, about one-half longer than the basal section of $R_4+_5$ which is almost in alignment; *r* faint, at extreme tip of $R_1$; cell 1*st* $M_2$ closed, rectangular, approximately equal in length to the veins beyond it; transverse elements closing cell 1*st* $M_2$ very pale; *m-cu* at fork of *M*.

Abdomen brown, the sternites paler. Male hypopygium with the ninth tergite deeply notched medially, each lateral lobe rounded and with about a dozen powerful elongate setae, with additional smaller ones. Basistyles relatively small, the mesal lobe slender, the setae on its cephalic face longer. A single developed dististyle, this a small fleshy lobe that is provided with long setae, the mesal face produced mesad into a long, gently curved rostrum with a single, gently curved spine near midlength of caudal margin; apex of rostrum with a few small setae. Gonapophyses with the mesal lobe long and slender, the tip subacute.

*Habitat.*—Massachusetts. *Holotype:* ♂, Rochester, Plymouth County, on cranberry bog, July 9, 1924 *(D. S. Lacroix)*.

*Dicranomyia lacroixi* is named in honor of the collector of the type-specimen, Mr. Donald Lacroix. The species is very isolated although bearing a superficial resemblance to *D. longipennis* (Schummel), to which species it would run by the author's key to the Eastern species of *Dicranomyia* (Cornell Univ. Agr. Expt. Sta., Mem. 25; 894-895; 1919). The fly is readily distinguished by the diagnostic characters indicated above.

**Dicranomyia cramptoni** sp. n.

General coloration dark brown, the pleura yellowish gray pruinose; antennae black throughout; rostrum dark; halteres short, the knobs infuscated; wings tinged with gray, the stigma brown; $Sc_1$ long, ending opposite or just beyond the origin of *Rs:* male hypopygium large and very complicated in structure.

♂. Length 5.5-5.8 mm.; wing 6-6.5 mm. ♀. Length about 6.5-7 mm.; wing about 6.2 mm.

Rostrum and palpi brownish black. Antennae black throughout, the flagellar segments oval. Head gray, the anterior vertex about twice as wide as the diameter of scape.

Pronotum dark brown. Mesonotum dark brown, the praescutum laterally with a sparse yellow pollen, the median stripe remaining shiny, scutellum dark brown with an obscure yellow basal median spot; postnotum dark brown, gray pruinose.

Pleura dark brown, heavily yellowish gray pruinose. Halteres relatively short, obscure yellow, the knobs dark brown.

Legs with the coxae and trochanters obscure yellow; femora light brown, the bases extensively more yellowish, the tips narrowly dark brown; tibiae brown, the tips somewhat darker, tarsi brownish black.

Wings with a faint grayish tinge; stigma small, circular, brown, veins dark brown. Venation: $Sc_1$ ending opposite or slightly beyond the origin of *Rs*, $Sc_2$ some distance from its tip, $Sc_1$ alone about equal to or longer than *m-cu;* vein $R_1$ curved toward $R_2+_3$ at the stigma, the tip pale and subobsolete; *Rs* arcuated, about twice the basal deflection of $R_4+_5$; cell 1*st* $M_2$ closed, rectangular, shorter than any of the veins beyond it; *m-cu* at or before the fork of *M*.

Abdominal tergites dark brown, the sternites obscure brownish yellow; hypopygium dark. Male hypopygium very large and complicated in structure. Ninth tergite with a stout lobe at each caudo-lateral angle, each of these provided with two tufts of stout yellow setae, the space between the lobes extensive, broadly U-shaped. Basistyle stout, the ventro-mesal lobe large and complicated, with a dusky, more basal, cylindrical lobule terminating in a brush of yellow setae; apex of lobe broadly expanded into a flattened pale blade that is further split into three conspicuous divisions, the margins of which are conspicuously fringed with setae. At the base of the ventral dististyle, on ventral side, a powerful, terete, boomerang-shaped structure, pale in color, directed ventrad and caudad. Ventral dististyle large and fleshy, the usual rostriform structure here greatly complicated by supernumerary outgrowths, including a long, pale tail-like blade near the usual two spines; apex of rostrum expanded into two flattened, divergent blades, the more basal of which is densely set with setae and short spinulae. Dorsal dististyle strongly curved, the tip suddenly narrowed to an acute point. Ovipositer with the tergal valves relatively small and slender, gently upcurved, projecting very slightly beyond the level of the stout, straight sternal valves.

*Habitat.*—Massachusetts. *Holotype:* ♂, Fish-hatchery, near Sunderland, Franklin County, altitude 200 feet, October 16, 1924 *(C. P. Alexander). Allotopotype,* ♀. *Paratopotypes,* 3 alcoholic ♂♂, October 15, 1924 *(G. C. Crampton);* 3 ♂♂, 3 ♀♀, with the type *(C. P. Alexander).*

*Dicranomyia cramptoni* is named in honor of Dr. G. C. Crampton, who collected the first-discovered specimens. The

flies were swept from small patches of *Juncus* in a single restricted locality. The fly is very different from any known to the writer. The structure of the male hypopygium is exceedingly complicated by outgrowths that involve not only the basistyles but even more strikingly the rostral region of the ventral dististyle. The hypopygium is more complicated in structure than in either of the Palaearctic species, *D. magnicauda* Lundström (Northern Europe) or *D. megacauda* Alexander (Northern Japan).

**Hexatoma microcera** sp. n.

General coloration gray pruinose; antennae of male short, if bent backward barely attaining the wing-root; praescutum with three blackish stripes; legs comparatively short and stout; wings subhyaline, faintly tinged with brown; *r* on $R_2+_3$ near the fork.

♂. Length 5.8-6.5 mm.; wing 7.1-8 mm.

Rostrum short, brown, pruinose; palpi dark brown. Antennae relatively short, if bent backward barely attaining the wing-root, dark brown; seven antennal segments, the terminal one microscopic; first flagellar segment about equal to the following two taken together; flagellar segments 2, 3 and 4 gradually shortened. Head dark brown, the orbits narrowly light gray pruinose, the low vertical tubercle likewise pruinose.

Mesonotum light gray, the praescutum with three blackish stripes; scutum gray, the centers of the lobes blackish; scutellum and postnotum gray pruinose. Pleura dark brown, pruinose, the dorsopleural membrane dark brown. Thorax clothed with moderately long erect white setae. Halteres pale, the knobs infuscated.

Legs comparatively short and stout; coxae gray pruinose; femora reddish brown, the tips passing into black; tibiae and basitarsi similar, their tips narrowly darkened; remainder of tarsi dark brown.

Wings subhyaline, faintly tinged with brown in cells *C* and *Sc*, along *Rs* and the radial veins and along the cord; veins dark brown. Venation: $Sc_1$ ending immediately before the fork of *Rs*, $Sc_2$ some distance from its tip, $Sc_1$ alone about equal to *r-m*; *r* on $R_2+_3$ a little more than its own length before the fork; cell $R_2$ larger than cell *2nd* $R_1$; veins $M_1+_2$, $M_4$ and $Cu_1$ subevanescent at tips; *m-cu* at or just before the fork of *M*.

Abdomen dark brown, provided with erect white setae.

*Habitat.*—North America, without exact data. *Holotype,* ♂, Labelled "Smiths, Amer. bor., 1867." *Paratopotypes,* 2 ♂♂.

Type in the collection of the Vienna Museum.

Compared with *Hexatoma megacera* (Osten Sacken), the present species is seen to be a large light gray fly with heavier body and stouter legs. The short antennae contrast strikingly with the condition found in *megacera* where the organ is longer than the entire body. The fly is more closely allied to the larger *H. burmeisteri* (Loew) of Europe but is distinct from any of the numerous European species. It is unfortunate that the exact locality is in doubt since the species is of more than ordinary interest. Dr. Zerny suggests that the "Smiths" of the locality label may refer to the collector (as Smithson) rather than to any locality.

**Dicranota currani** sp. n.

♂. Length about 5 mm.; wing 7-7.3 mm.

Closely related to *D. divaricata* Alexander, from which it differs as follows:

Mesonotal praescutum yellowish gray with three very conspicuous dark brown stripes, the broad median stripe entire except near the suture. Legs stouter, especially the middle legs, brownish black with the exception of the restricted femoral bases. Abdomen uniformly dark brown, including the hypopygium. Male hypopygium with the ventral interbase a long flattened blade, the apex subacute to acute, the mesal or inner edge nearly straight, the lateral or outer edge gently curved to the apex. Lateral arms of gonapophyses much broader and stouter than in *D. divaricata.*

*Habitat.*—Ontario, Quebec. *Holotype:* ♂, Ottawa, Ontario, May 9, 1923 *(C. H. Curran). Allotype,* ♀, Hull, Quebec, May 9, 1924 *(C. H. Curran). Paratopotypes,* 8 ♂♂; *paratypes,* 23 ♂♀, with the allotype.

Type in the Canadian National Collection.

This interesting *Dicranota* is named in honor of the collector, Mr. C. Howard Curran, to whom I am indebted for many favors in the past.

**Rhaphidolabis (Rhaphidolabis) avis** sp. n.

Very similar to *R. (R.) tenuipes* Osten Sacken, from which it differs strikingly in the structure of the male hypopygium.

Median lobe of ninth tergite slender, as in the *tenuipes* group. Dorsal interbase produced into a slender chitinized rod, at about two-thirds the length narrowed and bent at a right angle to the acute tip. Ventral interbase in its general contour suggesting the body of a bird, the flattened body portion with about eight delicate setae, the head produced mesad into a strong chitinized beak, the region of the frons with a smaller squat spine. Dististyle a long flattened blade that narrows gradually to the subacute apex.

*Habitat.*—Virginia. *Holotype:* ♂, Dead Run, Fairfax County, September 27, 1914 *(R. C. Shannon).*

## A New Species of the Genus Condidea (Diptera, Syrphidae).

By Raymond C. Osburn, Ohio State University, Columbus, Ohio.

The genus *Condidea* was erected in 1907 by Coquillett (Canadian Entomologist, XXXIX, p. 75) to include only his new species *Condidea lata,* which thereby became the genotype. Although *Condidea* is related rather closely to *Sericomyia* Meigen, it has been generally accepted as a distinct genus. *C. lata* has been taken a number of times and shows a considerable range in distribution, from the New England states to Wisconsin, but it has nowhere been reported as common. Johnson (Fauna of New England, 15, Occasional Papers of the Boston Soc. Nat. Hist., VII, Feb., 1925) has placed the *Sericomyia sexfasciata* of Walker, also a rare species, in the genus *Condidea.* Both of these species are probably quite northern in their distribution. In consideration of these facts, it will be of interest to describe and record another species of *Condidea.* This is also northern, taken at Fargo, North Dakota, and thus far is known from a single female. The specimen has been in my hands for a number of years, but I have delayed describing it in the hope that more material might come to hand.

**Condidea transversa** n. sp.

General characters very similar to those selected by Coquillett in *C. lata* for defining the genus, but differing in a number of ways, especially in the character of the abdominal markings.

♀. Face yellow, with yellowish pollen and fine yellowish white pile; a black facial stripe connects on the antennal process with the black of the front, and below with a broad oral margin of the same color, which also covers the cheeks broadly. Front narrowed above with a well-marked median groove; whitish pollinose on the lower part, a supra-antennal spot and the upper part more shining, pile short and black. First two antennal joints black, third joint reddish brown, sub-quadrate, with rounded angles; arista also reddish and long reddish plumose. Occiput with long yellow pile behind the vertex and on the lower part, between these the pile is very short and is black near the eye margins. Face and tubercle moderately produced.

Thorax bronze, with blue reflections, humeri distinctly white pollinose, pile above very short, dark yellowish, becoming blackish on the disc, on the pleurae longer and light yellowish. Scutellum purplish bronze, with pile above very short and black, longer on the margin and mixed with yellow on the sides. There is a transverse band of light yellow short pile between the black pile of the thorax and that of the scutellum.

Abdomen ovate, distinctly broader than thorax, depressed, hind margins of the third and fourth segments somewhat shining and the whole of the fifth conspicuously shining. Segments 2, 3 and 4 each with a pair of conspicuous, straight, transverse yellow spots, broadly separated on the midline, more narrowly separated from the lateral and anterior margins. The spots on segment 2 are very striking, more than half the length of the segment and fully twice as broad as the following spots, which are about equal in size. The anterior and posterior borders of all the spots are straight and parallel. Pile very short, longer and yellowish on the anterior angles and on the yellow spots of segment 2; otherwise black. Venter reddish yellow on sides near base; otherwise black.

Femora black, tibiae and tarsi dark brown, the knees narrowly reddish brown, pulvilli yellowish. Wings somewhat infuscated at base and on anterior part, veins black, pleurostigma brown, venation like that of *C. lata*, the third vein considerably incurved into the first posterior cell. Halteres light reddish yellow; alulae white, with long whitish yellow pile. Length, 13 mm.

*Holotype*, a single female taken by O. A. Stevens at Fargo, North Dakota, June 22, 1913, on flowers of *Rubus strigosus*.

The species of *Condilea, lata, sexfasciata* and *transversa*, differ from *Sericomyia* in the curved third vein, the very broad first pair of abdominal spots, and the more depressed form of

the abdomen. These species may be separated by the shape and position of the abdominal spots, as follows:

1. First pair nearly round, the following ones reniform or broken into spots, the third noticeably oblique ....*C. lata*
2. First pair constricted at the middle or abruptly widened at the outer end, the following ones similar in form but narrower ..... *C. sexfasciata*
3. First pair nearly twice as long as wide, the anterior and posterior borders straight and parallel, the following spots much narrower, all the spots transverse.....*C. transversa*

## Assistance Wanted in the Study of Ants (Hym.: Formicidae).

EDITOR, ENTOMOLOGICAL NEWS:

The writer, who is a graduate student in the Department of Entomology at the University of Illinois, has chosen as a subject for his doctorate thesis a study of the ants of a Middle-Western town, with especial reference to those infesting houses.

Among the eight or ten species of ants known as common house pests in Urbana, Illinois, there is one species that is extremely abundant and annoying; this species is *Tapinoma sessile* Say.

This ant is about 2.4 mm. long, varies from a light brown to almost a pitch black in color, and is easily recognized by the absence of a well-developed scale or node on the petiole. The workers when crushed have a peculiar rotten cocoanut-like or nauseating odor. These ants have a fondness for nesting in the soil under logs, stones, planks or leaves and are often found nesting in rotting wood or under the loose bark of fallen logs and limbs. As it is a native ant, it has a wide distribution and should be found in every state in the Union.

I wish to fully investigate the distribution, biology, and control of this species and also attempt to definitely ascertain whether it has sub-species or varieties. If you have alcoholic or mounted specimens of *Tapinoma sessile*, will you not kindly loan them to the writer for study? Any information you are in position to furnish concerning any phase of this ant's biology, distribution, control, natural enemies, etc., will be very helpful to me and will be greatly appreciated. In the event that I publish, I shall be glad to make the proper acknowledgments.

Trusting that I may secure your interest and co-operation in this investigation, and assuring you of my willingness to reciprocate in any possible way,

M. R. SMITH, Natural History Bldg., Urbana, Illinois.

# ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., FEBRUARY, 1926.

## Entomology at the "Convocation Week" Meetings, December 28, 1925, to January 2, 1926.

Our annual summary of the papers on Tracheate Arthropods is based, this time, exclusively on the printed programs of (*a*) The American Association for the Advancement of Science and Associated Societies meeting at Kansas City, Missouri, and (*b*) The American Society of Naturalists and The American Society of Zoologists at New Haven, Connecticut. It is proper to admit that the term "Convocation Week," so widely emphasized some years ago, appears to have fallen into disuse and would not appear in our title if it were not that it gives a certain continuity to the editorials of the February numbers of the NEWS.

The programs for Kansas City listed entomological papers for the following bodies (after deducting duplications):

| | |
|---|---|
| Entomological Society of America alone | 27 |
| The same with American Association of Economic Entomologists | 7 |
| American Association of Economic Entomologists alone | 83 |
| Section F (Zoology), Amer. Asso. Adv. Science alone | 7 |
| The same with Ecological Society of America | 5 |
| The same with American Society of Parasitologists | 2 |
| American Society of Parasitologists alone | 1 |
| Botanical Society of America, Joint Genetics Sections | 3 |
| The same with Ecological Soc. Amer. | 1 |
| Ecological Society of America alone | 5 |
| American Phytopathological Society alone | 2 |
| The same with Potato Association of America | 1 |
| Total | 144 |

The corresponding numbers on the programs for New Haven, after similar deductions, were

| | |
|---|---|
| American Society of Naturalists | 7 |
| American Society of Zoologists | 7 |
| Total | 14 |
| Total for both localities | 158 |

The subjects treated in these 158 papers follow; where two numbers are given separated by a comma, the first refers to Kansas City, the second to New Haven; otherwise the number is that of papers announced for the Missouri City.

i

Teaching entomology .... 2
Technique ..... 2
Cytology .....3, 3
Anatomy ..... 3
Physiology .....8, 2
Ontogeny .....3, 1
Genetics .....3, 4
Ecology .....17
Parasites of Insects ....8, 4
Insects affecting Man and Animals ..... 6
Bibliography ..... 1
Nomenclature ..... 1
General Subjects ..... 3
General Economic Entomology .....11
Insecticides .....20
Apiculture .....11
Insects affecting Cereal, Forage and Field Crops.15
Do. Truck Crops ..... 7
Do. Greenhouse Plants ... 2
Do. Fruit .....12
Do. Stored Products ..... 4
Do. Forest & Shade Trees.. 3

ii

Comprehensive Groups ... 4
Myriopoda ..... 1
Araneina .....1, 1
Acarina ..... 1
Orthoptera .....8, 2
Isoptera .....2, 2
Odonata .....2, 1
Neuroptera ..... 1
Homoptera .....12
Heteroptera ..... 4
Coleoptera .....16
Hymenoptera *(excl. Apis)* ..... 3
*Apis* ..... 7
Lepidoptera .....14
Diptera *(excl. Drosophila)* .....8, 2
*Drosophila* .....1, 5
Siphonaptera ..... 1

Many of these figures are duplicated, both between sections i and ii and also within each section.

It will be noted that the total number of papers, 158, is lower than that of the two preceding years: 166 (Washington, 1924-5) and 180 (Cincinnati, 1923-4).

The annual public address of the Entomological Society of America was by Dr. Vernon Kellogg, "Co-operation or Isolation in Science," while Dr. L. O. Howard reported to both entomological societies on the International Congress of Entomology of Zürich. A joint meeting of the two societies was held for a symposium on Insect Parasitism, seevn speakers having been announced.

Another symposium, participated in by Section F, A. A. A. S. and the new American Society of Parasitologists, entitled

"Medical Aspects of Parasitology," included two entomological titles, and two such were also announced for the symposium of the joint session of the Botanical and Ecological Societies of America on "Prairie Ecology."

## Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE

### Personal Mention.

Dr. Vernon Kellogg has been made Commander of the Order of Leopold by King Albert.

H. H. Knight, assistant professor of entomology, Iowa State College, has been advanced to associate professorship.

F. M. Hull has been appointed an instructor in zoology and entomology at the State College, Pullman, Wash.

H. G. Barber is working on a catalogue of the Lygaeidae of the world, in co-operation with other hemipterists.

C. F. Muesbeck is preparing a revision of the American braconid flies belonging to the subfamily Braconinae.

—*Journal of Economic Entomology.*

### Changes of Address.

Wm. F. Lawler, Jr., Pompton Plains, N. J.
W. S. Blatchley, Box 374, Dunedin, Fla.
Owen Bryant, Banff, Alta., Canada.
A. B. Wolcott, Field Mus. N. H., Chicago, Ill.
R. A. Leussler, 115 South 52nd Street, Omaha, Nebr.
L. G. Gentner, 225 Bailey Street, East Lansing, Mich.
Lawrence Bruner, 3033 Deakin Street, Berkeley, Cal.
Hugo Kahl, Carnegie Museum, Pittsburgh, Pa.
S. W. Frost, Penn State College Laboratory, Arndtsville, Pa.
Bennet A. Porter, 2 East Locust Street, Vincennes, Ind.
J. N. Knull, 1120 North 17th Street, Harrisburg, Pa.

### The Dognin Collection of Lepidoptera at the U. S. National Museum.

Last spring Dr. Wm. Schaus carried on a successful campaign to raise the money for the purchase of the Dognin collection of Lepidoptera for the National Museum. Mr. Dognin, a well-known French Lepidopterist, offered his collection for $50,000. This amount Dr. Schaus succeeded in raising, largely among his personal acquaintances. In the early summer he went to France, accompanied by Mr. J. T. Barnes as assistant, and they personally attended to the packing of the collection,

which reached the National Museum in good condition in September. It contains about 82,000 specimens of butterflies and moths, among which are types of about 3,300 species, nearly all American.

This is the second notable addition to the Division of Insects within the year, the first having been the late Colonel Thos. L. Casey's large collection of Coleoptera. These collections represent the life work of two distinguished entomologists and are the greatest additions which the Division of Insects has ever received since its establishment, except the gifts of Dr. Schaus himself. J. M. ALDRICH,

Associate Curator, Division of Insects, U. S. N. M.

### Lecture by Dr. E. P. Felt.

A course of free public lectures will be given in the lecture room of the Education Building, New York State Museum, Albany, New York, from January to April, 1926, on Friday afternoons. The opening lecture was to be on January 8, "Social Life Among Insects," by Dr. E. P. Felt, State Entomologist.

### Collecting in the West.

Many Lorquin Entomological Club members and associates spent the past summer months of 1925 collecting in new territories on the Pacific Coast. The attached list of names and localities visited may be of interest to Eastern collectors who desire exchange of specimens from these places.

Jack Beller—Sierra Madre Mts. California, Dr. J. A. Comstock—Desert Mts. of Nevada and Utah, J. E. Cottle—Shasta County, Calif., Geo. Field—Colorado Desert, Calif., Chas. Fox—Oregon and Washington, J. D. Gunder—Plumas County, Calif., Chas. Ingham—Northwestern Calif., Geo. Malcolm—Owens Valley district, Calif., Hal Newcomb—San Bernardino Mts., Calif., R. F. Sternitzky—Northwestern Calif., John Strohbeen—Sierra County, Calif., V. Wyckoff—Kern County, Calif. CHAS. INGHAM, *Secretary.*

### Oviposition of Brenthis bellona (Lep.: Nymphalidae).

*Brenthis bellona* has enough originality to depart from the usual custom of butterflies, of placing eggs only on the food-plant. One year on the 13th of May, a meadow fritillary was tied in a bag over a clump of violets, was fed daily, but ova failed to appear on the foliage. The butterfly was exceedingly restless, it seemed useless to keep her longer and on the 16th she was freed. The bag was torn open and it was a surprise

to find little, yellow, pointed eggs had been scattered over the end of the paper bag—in a moth-like manner—where you couldn't see when you peeped in. There were fifty-nine of them, stouter than *philodice* eggs, conical, flattened at the apex, with many longitudinal lines, joined by minute cross lines. On the 29th of May the eggs were turning gray and on the 31st the hairy, dirty-colored larvae, with dark heads, came out. At the end of June nearly all had grown and become pretty brown chrysalids trimmed with gilt spots and were pendant from the cover of the can or the stems of the violets. The first adult emerged on the second of July.

N. McMURRAY, Clearfield, Penna.

## Entomological Literature

COMPILED BY E. T. CRESSON, JR.

**Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.**

**The numbers in Heavy-Faced Type refer to the journals, as numbered in the following list, in which the papers are published.**

**All continued papers, with few exceptions, are recorded only at their first installments.**

**Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.**

**For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.**

**Papers published in the Entomological News are not listed.**

**4**—Canadian Entomologist. **9**—The Entomologist. **10**—Proc. Ent. Soc. Washington. **12**—Journal of Economic Ent. **14**—Ent. Zeitschrift, Franfurt a. M. **15**—Insecutor Ins. Menstruus. **18**—Internationale Ent. Zeit., Guben. **21**—The Entomologist's Record. **33**—Bull. et Annal. Soc. Ent. Belgique. **50**—Proc. U. S. National Mus. **69**—Comptes Rendus, Acad. Sci., Paris. **70**—Bul. Ent. Pologne. **72**—Eos. Rev. Espanola, Ent. **74**—Acta Ent. Mus., Pragae. **75**—Annals and Mag. of Nat. History, London. **101**—Biol. Bulletin, Woods Hole, Mass. **130**—Ohio Jour. of Sciences. **140**—Oc. Pap., Mus. Zool., Univ. Michigan. **143**—Bul., Div. Nat. Hist. Surv., Urbana. **144**—Ann. Sci. Nat., Zool., Paris.

**GENERAL.—Bibliographia** Zoologica. Vol. xxxv, 530 pp. **Campbell, F. L.**—Insect toxology.—Science, lxiii, 45-6. **Coker, R. E.**—Fauna of Penikese island [Identification of the insects by various entomologists]. 1923.—**101,** 17-37. **Graves, P. P.**—Over collecting.—**9,** lviii, 297-8. **Hayward,**

**K. J.**—Miscellaneous notes from Argentina.—**21,** 151-4 (cont.). **Hunter, W. D.**—Obituary.—12, xviii, 844-8. **Keler, S.**—Ein versuch der anwendung mathematischer methoden auf die entomologische systematik.—**70,** iv, 149-96. **Kiefer, O.**—Jugend und entomologie.—**14,** xxxix, 125-6. **Richardson, R. E.**—Illinois River bottom fauna in 1923.—**143,** xv, 391-422. **Schuster, W.**—Blaublindheit der vogel und blaue schmetterlinge und kaefer.—**18,** xix, 241-2.

**ANATOMY, PHYSIOLOGY, MEDICAL, ETC.—Clare, M. R.**—Study of oxygen metabolism in Dros. melanogaster.—**101,** xlix, 440-60. **Grandori, R.**—Studi sulla blastocinesi degl insetti.—Rend. Atti, R. Acc. Naz. Lincei, 1925, ii, 449-55. **Pruthi, H. S.**—Moulting of insects.—Nature, cxvi, 938.

**ARACHNIDA AND MYRIOPODA.—Brazil e Vellard.**—Contribuicao ao estudo do veneno das aranhas.—Mem. Inst. de Butantan, Sao Paulo, ii, 5-78. **Ewing, H. E.**—Sulphur-impregnated clothing to protect against chiggers.—**12,** xviii, 827-9.

(N) **Mueller, A.**—Zur kenntnis der jugendformen einiger Opilioniden.—Senckenbergiana, vii, 210-24.

(S) ***Mello-Leito.**—Pequenas notas arachnologicas.—Bol. Mus. Nac., Rio de Janeiro, i, 455-63. ***Vellard, J.**—Um novo genero e duas especies novas de aranha do estado de S. Paulo.—Mem. Inst. de Butantan, Sao Paulo, ii, 79-84.

**THE SMALLER ORDERS OF INSECTA.**—(N) ***Cockerell, T. D. A.**—New fossil Inocellia (Neuroptera) from Florissant.—**9,** lviii, 295-7. ***Tillyard, R. J.**—(see under Hymenoptera).

(S) ***Cockerell, T. D. A.**—Trichoptera (see under Coleoptera). ***Gravier et Fage.**—Sur une nouvelle espece de Peripate du Chili (Opisthopatus costesi).—**144,** vii, 185-200. ***Laing, F.**—On a n.g. and sp. of Psocoptera from Br. Guiana.—**9,** lviii, 289-90.

**ORTHOPTERA.—Caudell, A. N.**—Pycnoscelus surinamensis; on its nymphs and the damage it does to rose bushes.—**10,** xxvii, 154-7.

(S) ***Vignon, P.**—Essai de classification du genre Typophyllum.—**72,** i. 248-8i.

**HEMIPTERA.—Cutright, C. R.**—Aphids new to Ohio.—**130,** xxv, 313-4. **Torre-Bueno, J. R.**—On a small collection of Heteroptera from Br. Columbia.—**4,** lvii, 280.

(N) **Muir, F.**—On the genera Amblycotis and Bostaera. (Delphacidae).—**4,** lvii, 279.

(S) ***Bergroth, E.**—On some Neotropical Tingidae.—**33,** lxii (1922), 149-52.

**LEPIDOPTERA.—Detwiler, J. D.**—Further studies of the ventral prothoracic gland of notodontid caterpillars.—**4,** lvii, 266-71.

(N) **Barnes & Benjamin.**—Notes on the genus Obrima in the U. S. (Phalaenidae).—**10,** xxvii, 168. ***Dyar, H. G.**—Notes on some American Phycitinae (Pyralidae).—**15,** xii, 220-6.

(S) **Dyar, H. G.**—Note on the larva of Sabine hyperoche (Limacodidae).—**15,** xii, 218. ***Dyar, H. G.**—New corn and boll worm from Peru (Pyralidae).—**15,** xii, 219-20. ***Hering, M.**—Die gross-schmetterlinge der erde. Faun. Amer., Lief. 178-9. Fam. Dioptidae in part. ***Joicey & Talbot.**—Notes on some L., with descr. of new forms.—**75,** xvi, 633-53. **Krueger, R.**—Mesenopis albivitta. Papilio bogotanus. Perisama hazarma.—**18,** xix, 235; 242-3; 249. ***Krueger, R.**—Eine neue Catagramma.—**18,** xix, 250. ***May, E.**—Papilio kuhlmanni sp. n.—Bol. Mus. Nac., Rio de Janeiro, i, p. 405.

**DIPTERA.—Crampton, G. C.**—Evidences of relationship indicated by the thoracic sclerites of certain eriopterine tipuloid diptera.—**15,** xii, 197-213. **Hubault, E.**—Contribution a la biologie du genre Medeterus (Dolichopodidae).—**144,** vii, 133-42. **Mercier et Villeneuve.**—Contribution a etude de anatomie de la tete des dipteres cyclorhaphes. La ptilin et le muscle ptilino-pharyngien.—**69,** clxxxi, 882-4.

(N) ***Curran, C. H.**—Some apparently new Nearctic Tachinidae.—**4,** lvii, 281-6. ***Curran, C. H.**—Contribution to a monograph of the Syrphidae from north of Mexico.—Bul. Univ. Kans., xxvi, No. 7; Sci. Bul. xv, 1-216. [This number is dated April 1, 1925, and was received at Philadelphia Academy Jan. 5, 1926.] **Dyar, H. G.**—Phoniomyia and Dendromyia again. (Culcidae).—**15,** xii, 226. ***Dyar, H. G.**—A New No. Am. Dixa and note (Culicidae).—**15,** xii, 217-8. **Greene, C. T.**—Tentative arrangement of the muscoid flies based on the puparia.—**10,** xxvii, 157-62. **Hull, F. M.**—Review of the genus Eristalis in No. Am.—**130,** xxv, 285-312. **Johnson, C. W.**—Diptera of the Harris collection.—Proc. Boston Soc. N. H., xxxviii, 57-99. ***Walley, G. S.**—New Canadian Chironomidae of the genus Tanypus.—**4,** lvii, 271-8.

(S) ***Dyar, H. G.**—Some mosquitoes from Venezuela.—**15,** xii, 213-6. ***Hine, J. S.**—Tabanidae of Mexico, Central Am. and the West Indies.—**140,** No. 162.

**COLEOPTERA.—Swaine, J. M.**—Factors determining the distribution of N. Am. bark-beetles.—**4,** lvii, 261-6.

(N) ***Obenberger, J.**—Revision monographique du genre Taphrocerus.—**74,** ii, 45-83.

(S) ***Champion, G. C.**—Studies in Phalacridae. II. Asiatic and tropical Am. forms.—**75,** xvi, 601-21. ***Cockerell, T. D. A.**—Tertiary insects from Argentina.—50, lxvii, Art. 1. ***Obenberger, J.**—Deuxieme serie de nouveaux genres de Buprestides. De Buprestidarum speciebus novis.—**74,** ii, 7-44; 93-115. ***Pic, M.**—Nouvelles especes de coleopteres exotiques du Mus. Nat. de Prague.—**74,** ii, 85-90. **Plavilstshikov, N. N.**—Revision des especes eurasiques du genre Judolia.—**72,** i, 291-320.

**HYMENOPTERA.—Combes, M.**—Les fourmis jettent-elles les objets volontairement?—**144,** vii, 295-300.

(N) ***Cockerell, T. D. A.**—Descriptions and records of bees.—**75,** xvi, 621-29. **Cushman, R. A.**—Synonymy and generic position of two No. Am. ichneumon-flies.—**10,** xxvii, 164-6. ***Gahan, A. B.**—New encyrtid parasite in the eggs of Moneilema (Chalcidoidea).—**10,** xxvii, 167-8. ***Tillyard, R. J.**—Kansas permian insects. Pt. 6. Additions to the orders Protohymenoptera and Odonata.—Amer. Jour. Sc., xi, 58-73. ***Viereck, H. L.**—Two new Canadian Ichneumonoidea.—**4,** lvii, 278.

(S) ***Banks, N.**—Psammocharidae from Panam.a—Bul. Mus. Comp. Zool., Cambridge, lxvii, 329-38.

## SPECIAL NOTICES.

**The Macrolepidoptera** of the World. Fauna Amer., Pts. 169-70. These parts are finishing the family Arctiidae.

**Opinions** rendered by the International Commission on zoological nomenclature. (Smiths. Misc. Coll., lxxiii, No. 3. Opinions 82-90.) Includes the following of interest to entomologists: Suspension of rules for Musca Linn., 1758. Op. 83, The principle of the rule of homonyms is that any properly published identical name of later date is "stillborn and cannot be brought to life." Op. 87, Printer's proof-sheets do not constitute publication. . . . Op. 88, The name of a species is not disqualified because the author included in his conception bodily parts of more than one species.

MANUAL OF INJURIOUS INSECTS, by GLENN W. HERRICK, Professor of Economic Entomology, Cornell University. Henry Holt and Company, New York.—This new work is dedicated to the founder of Cornell University, Ezra Cornell, who knew the value of such studies and their application to the farmer. The book is profusely illustrated, there being 458 figures. The typography is all that could be desired. The first chapter is devoted to the position, structure, and transformation, and subsequent chapters on losses caused by insects; as disseminators of plant and animal diseases; useful insects; the uses of various insecticides and spraying apparatus; followed by an account of the insects affecting the various kinds of plant life. A valuable feature is the references to the more important literature under each special heading. We would especially call attention to the little maps of the United States, showing the distribution of injurious species, which are interesting and useful. Prof. Herrick is an economic entomologist of wide experience and he has produced an admirable and useful addition to the works on injurious insects. H. SKINNER.

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INSECTS AND DISEASE OF MAN, by CARROLL FOX, M. D., Surgeon, U. S. Public Health Service. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia. Pages XII + 349. Figures 92. Price $4.00.

Dr. Carroll Fox, well known as an authority on the Siphonaptera, is to be congratulated on the way in which he has accomplished his purpose of gathering together "in a concise and practical way, the information necessary for a student taking up the study of medical entomology, or for the health officer working in the field of preventable diseases transmitted by arthropods." He has produced a book which will be found equally valuable in the class-room and in the field. Although the text devotes especial attention to the arthropods which transmit diseases of man in the United States, it by no means confines itself, either to forms of importance in human medicine or to those which occur in this country.

The subject matter is divided into two portions, Part I (230 pages) dealing with the arthropods themselves and Part II (98 pages) with the diseases which they transmit. In Part I, a short introductory chapter is followed by a detailed consideration of the disease-carriers among the Diptera, Siphonaptera, Anoplura, Hemiptera, Orthoptera and Acarina, and this division of the book comes to an end with a chapter on rodents of importance in connection with Bubonic Plague, and "A Few Notes on Technique."

In Part II we find first a well-written Introduction, which deals in a general way with such subjects as the relation of

arthropods to disease, modes of transmission, parasitism, etc. This is followed by chapters on Malaria, Yellow Fever, Dengue Fever, Filariasis, Pappataci Fever, Trypanosomiasis, Tularaemia, Plague, Typhus, Trench Fever, Relapsing Fever, Rocky Mountain Spotted Fever, and Tsutsugamushi Fever. The book concludes with a general index.

Control measures are, in general, treated in connection with the various diseases, but the discussion of means of eradicating fleas, lice, bugs and roaches accompanies the text dealing with these insects.

One of the most valuable features of the book is the space devoted to keys for the identification of disease-carrying arthropods. Some of the keys are original, but the majority are copied or adapted from authoritative publications. On the whole, the selection of keys has been very well done, although some improvement is still possible in this respect. It should be feasible, for example, to give a key to the fly larvae which cause myiasis that would be more valuable to the student than the one constituting Chapter XIV of the present work, which is taken without obvious alteration from Banks' paper of 1912. It is a pity, also, that after reprinting in full the latest keys to the subfamilies and genera of American Culicidae by Dyar and Shannon, time could not be taken to "adapt" Howard, Dyar and Knab's keys to the species of adult and larval Anophelines even to the extent of including *Anopheles barberi* (treated under *Coelodiazesis* by these authors) and correcting the names of certain species to conform with modern usage. I rather regret, too, that the splendid key to the genera of fleas of the world (pages 120-130) was included in a book of this type. This key itself is an excellent piece of work and will be of the greatest value to students of the Siphonaptera, but it is much more detailed and complete than is advisable for the ordinary student or sanitarian and occupies space which might well have been devoted to other purposes.

Of the 92 figures in the book, about three-quarters (68, to be exact) are original, being the work of Mr. L. H. Wilder, of the Hygienic Laboratory. These are all uniformly excellent, those of the fleas being particularly noteworthy. Of the remainder, 14 come from Stitt and the other 10 from the works of various authors. They, too, are good illustrations, although some of them do not come up to the standard set by Mr. Wilder. The figures copied from Stitt are reprinted word for word, including the legends, which was unwise, in a few cases. Thus number 8 of Fig. 45 (page 85) perpetuates the error made by Stitt in labelling a figure of the antenna of the tsetse fly, "*Glossina*, palps and arista," and in the legend for Fig. 50 (page 98), we meet with "*Sarcophaga*" *magnifica* instead of

*Wohlfahrtia*, and find a recognizable figure of the larva and adult of *Fannia* masquerading under the pseudonym of "*Anthomyia pluvialis*." In this connection, also, it may be noted that the book contains rather more than the usual allowance of typographical errors, a point which will doubtless be corrected in future editions.

In spite of these minor criticisms, however, the book may be whole-heartedly recommended as the best of its kind yet published on this side of the Atlantic. It will be a real pleasure to the teacher of Medical Entomology to have a book like this for the use of his students: one which is at once comparatively low in price, especially adapted to American needs, and combining those features which are of value both in class-room and laboratory and in subsequent work in the field.

FRANCIS M. ROOT.

## OBITUARY.

The daily papers and *Science* announce the sudden death of Professor HARRY ARTHUR GOSSARD, President of the American Association of Economic Entomologists for 1925, at Wooster, Ohio, on December 18 last. He was born at Ames, Iowa, February 7, 1868, received the degrees of Bachelor of Science (1889) and Master of Science (1892) from Iowa State College and was assistant entomologist in the Iowa Agricultural Experiment Station from 1890 to 1893. For the next six years he instructed in science in high schools and academies. In 1899 he became Entomologist of the Florida Experiment Station and professor of zoology, entomology and geology at the University of Florida. During this period he wrote Bulletin 67 of the Station on *The White Fly, Aleyrodes citri* (1903). In 1904 he was made Entomologist of the Ohio Experiment Station at Wooster, where he remained until his death. Since 1917 he had been non-resident professor of entomology of Ohio State University. The early volumes of the *Journal of Economic Entomology* contain his *Notes of the Season* and *The Catalpa Bud Maggot* (1908) and an interesting essay, *Relation of Insects to Human Welfare* (1909). Among the bulletins of the Ohio Station are his *The Catalpa Midge, Cecidomyia catalpae* (No. 197, 1908) and *Orchard Bark Beetles and Pinhole Borers* (No. 264, 1913).

# EXCHANGES

**This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.**

**These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.**

**Will** send volumes XXV (1921) and XXVII (1923), Revista Chilena de Historia Natural, in exchange for School Entomology by Sanderson & Peairs and Classbook of Economic Entomology by Wm. Lochhead (latest editions) sent to me by registered mail. Will give vol. XXV also for a copy of American Insects by V. L. Kellogg (last edition) sent registered. Prof. Dr. C. E. Porter, Casilla 2974, Santiago, Chile.

**For Exchange**—A fine collection of butterflies of the Indian region, 1300 species, including many rarities. Apply to Dr. C. F. C. Beeson, Forest Research Institute, Dehra Dun, India.

**Wanted**—For Cash. U. S. Bureau of Entomology Technical Series 5; and Bureau Circular 3, 27, and 132.—State Entomologist, Capitol Annex, Madison, Wisconsin.

**Wanted** to buy or exchange **Named** American Chrysids and Ruby Wasps. Mortimer L. J. Higgins, 36 Imlay St., Hartford, Connecticut.

**I wish to exchange** butterflies with collectors in the United States.—V. W. A. Moller, Frederick St., Taninga, Brisbane, Australia.

**Wanted**—Canadian Entomologist, Vol. 2 (1869) to 9 (1877); Vol. 12 (1879); Nos. 5, 9 of Vol. 17 (1885); No. 3 of Vol. 18 (1886); Vol. 19 (1887); Zoe, No. 12 of Vol. 5; Proc. Ent. Soc. Washington, Vol. 1 (1899) to 5 (1903); all in exchange for **Cetonides** and **Longicorns** from New Guinea or other countries. Also entom. literature could be given. Address Deutsches Entom. Institut (Walther Horn), Gossler Str. 20, Berlin-Dahlem, Germany.

**Wanted for cash** all kinds of hibern. pupae, such as P. troilus, rutulus, daunus, zolicaon, eurymedon, etc., A. orizaba, jorulla, S. columbia, californica, C. angulifera, A. luna, E. imperialis, C. regalis, also Sphingidae, etc. Send list with prices to Max Rothke, Scranton, Pa. (R. F. D. No. 2).

**Wanted**—Living pupae or cocoons of American moths and butterflies. Collectors communicate, Head & Co., Burniston, Nr. Scarborough, England.

Will exchange **Coleoptera** of Illinois for those from other parts of the continent.—Carl Selinger, 4419 Dover St., Chicago, Ill.

**Thysanoptera:** A small pocket collecting outfit containing vials, brush and memo sheets, sent free to entomologists interested in collecting thrips especially in foreign countries. Dudley Moulton, 244 California Street, San Francisco, California.

**Wanted**—Bombyliidae and Trypetidae. Will exchange local Bombyliids and Trypetids and other Diptera. Harold C. Hallock, Japanese Beetle Lab., Riverton, N. J.

**For Exchange:** Butterflies and moths from all parts of the world. Wanted: Sphingidae, Arctiidae, Catocalinae. Henry Wormsbacher, 1357 St. Charles Ave., Lakewood, Ohio.

**Wanted for Cash**—Saturnidae of the WORLD. A few duplicates for sale. W. Judson Coxey, Drexel Bldg., Philadelphia, Penna.

**I will collect** Coleoptera, Lepidoptera, Hemiptera, etc., in southwest Arkansas for those so interested. Miss Louise Knobel, East 3d St., Hope, Arkansas.

# RECENT LITERATURE

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### COLEOPTERA.

874.—**Brisley** (H. R.).—Notes on the Chrysomelidae of Arizona. (Trans., 51, 167-182, 1925)..... .35

### DIPTERA.

870.—**Painter** (R. H.).—A review of the genus Lepidophora (Bombyliidae). (Trans., 51, 199-127, ill., 1925)..... .20

877.—**Curran** (C. H.).—Descriptions of four Neotropical diptera. (Trans., 51, 259-264, 1925) ..... .15

### HYMENOPTERA

869.—**Bequaert** (J.).—The genus Ancistrocerus (Vespidae) in North America, with a partial key to the species. (Trans., 51, 57-117, 1925)..... 1.25

871.—**Compere** (H.).—A new genus and species of Aphelinidae from China. (Trans., 51, 129-134, 2 pls., 1925)..... .20

872.—**Viereck** (H. L.).—A new bee of the genus Andrena [from Nevada]. (Trans., 51, 135-136, 1925)..... .20

873.—**Frison** (T. H.).—Contribution to the classification of the Bremidae of Central and South America. (Trans., 51, 137-165, 2 pls., 1925)..... .65

### HETEROPTERA.

879.—**Neiswander** (C. R.).—On the anatomy of the head and thorax in Ranatra. (Trans., 51, 311-320, 1 pl., 1925).. .25

### LEPIDOPTERA.

865.—**Braun** (A. F.).—Some undescribed microlepidoptera and notes on life histories. (Trans., 51, 13-17, 1925)..... .20

867.—**Coolidge** (K. R.).—The life history of Danaus bernice strigosa (Danaidae). (Trans., 51, 27-33, 1925)..... .20

### ORTHOPTERA.

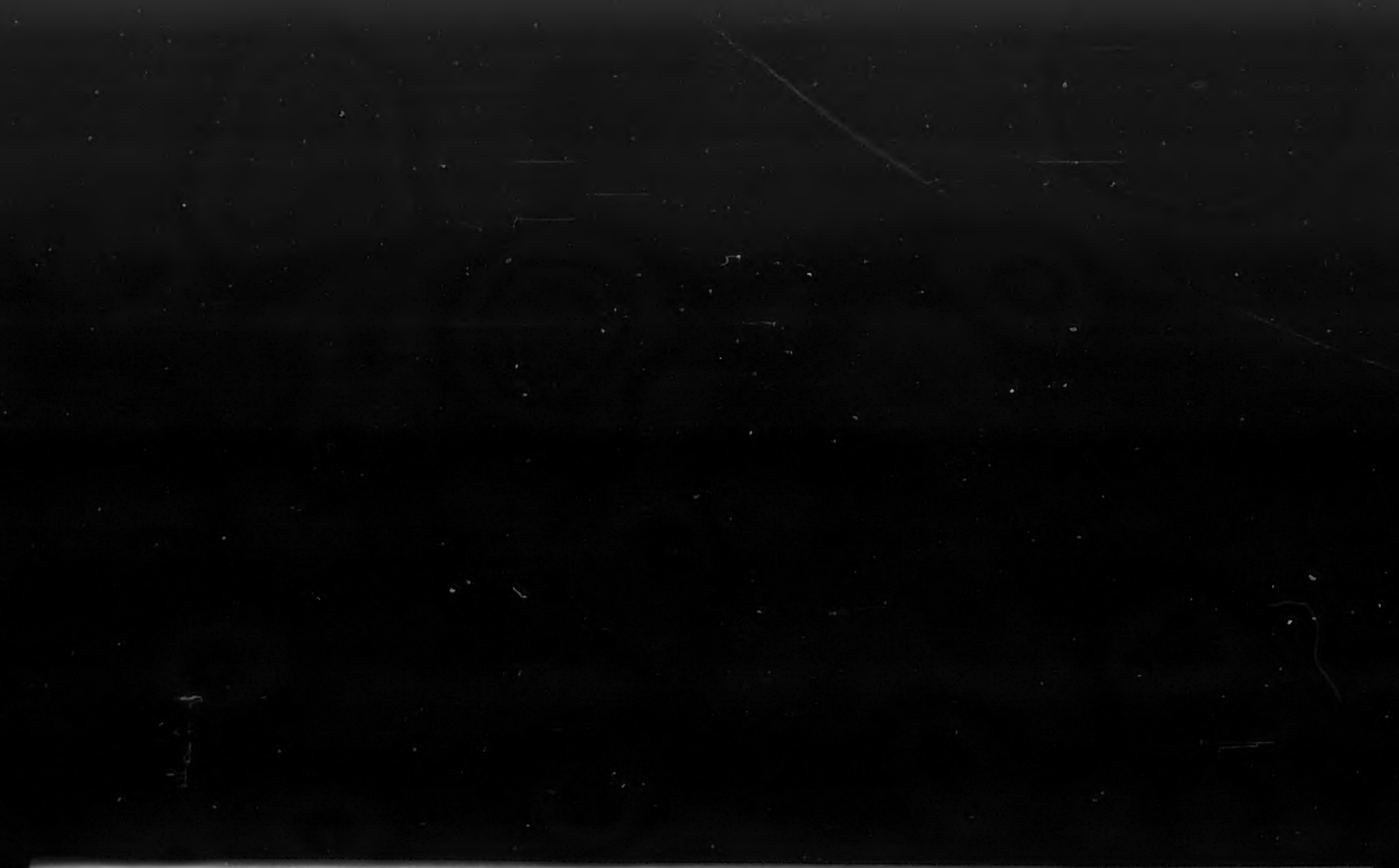
878.—**Hebard** (M.).—Dermaptera and orthoptera from the state of Sinaloa, Mexico. II. Saltatorial Orthoptera. (Trans., 51, 265-310, 2 pls.) ..... 1.00

880.—**Hebard** (M.).—The North American genus Inscudderia (Tettigoniidae, Phaneropterinae). (Trans., 51, 321-330, 1 col. pl., 1925) ..... .40

### Of Interest to Specialists.

The American Entomological Society has placed in operation a system by which entomologists who are not situated near the larger reference libraries, or who desire to build up special entomological libraries of their own and yet do not care to subscribe to the annual volume of the Society's "Transactions," may secure copies of the papers appearing in the Society's publications promptly after their receipt from the press.

If you are interested and desire to avail yourself of this system, advise us of the order or orders in which you wish to secure publications, together with a remittance of $1.00 or more as a deposit, and all papers on such orders will be mailed to you directly on their receipt from the printer. These will be charged against your amount of deposit at 25 per cent. discount from the list or general sale price. Any balance to your credit is returnable on demand should you not care to continue the subscription.



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